Construction Equipment Operators

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Significant Points

- Many construction equipment operators acquire their skills on the job, but formal apprenticeship programs provide more comprehensive training.
- Job opportunities are expected to be good, with as fast as average employment growth.
- Hourly pay is relatively high but, because some construction equipment operators cannot work in inclement weather, total annual earnings may be reduced.

Nature of the Work

Construction equipment operators use machinery to move construction materials, earth, and other heavy materials and to apply asphalt and concrete to roads and other structures. Operators control equipment by moving levers or foot pedals, operating switches, or turning dials. The operation of much of this equipment is becoming more complex as a result of computerized controls. Construction equipment operators may also set up and inspect equipment, make adjustments, and perform some maintenance and minor repairs.

Construction equipment operators include operating engineers and other construction equipment operators; paving, surfacing, and tamping equipment operators; and piledriver operators. *Operating engineers and other construction equipment operators* operate one or several types of power construction equipment. They may operate excavation and loading machines equipped with scoops, shovels, or buckets that dig sand, gravel, earth, or similar materials and load it into trucks or onto conveyors. In addition to the familiar bulldozers, they operate trench excavators, road graders, and similar equipment. Sometimes, they may drive and control industrial trucks or tractors equipped with forklifts or booms for lifting materials or with hitches for pulling trailers. They also may operate and maintain air compressors, pumps, and other power equipment at construction sites. Construction equipment operators who are classified as operating engineers are capable of operating several different types of construction equipment.

Paving and surfacing equipment operators use levers and other controls to operate machines that spread and level asphalt or spread and smooth concrete for roadways or other structures. *Asphalt paving machine operators* turn valves to regulate the temperature and flow of asphalt onto the roadbed. They must take care that the machine distributes the paving material evenly and without voids, and make sure that there is a constant flow of asphalt going into the hopper. *Concrete paving machine operators* control levers and turn handwheels to move attachments that spread, vibrate, and level wet concrete within forms. They must observe the surface of concrete to identify low spots into which workers must add concrete. They use other attachments to smooth the surface of the concrete, spray on a curing compound, and cut expansion joints. *Tamping equipment operators* operate tamping machines that compact earth and other fill materials for roadbeds. They also may operate machines with interchangeable hammers to cut or break up old pavement and drive guardrail posts into the earth.

Piledriver operators operate piledrivers—large machines, mounted on skids, barges, or cranes, that hammer piles into the ground. Piles are long heavy beams of wood or steel driven into the ground to support retaining walls, bulkheads, bridges, piers, or building foundations. Some piledriver operators work on offshore oil rigs. Piledriver operators move hand and foot levers and turn valves to activate, position, and control the pile-driving equipment.

Working Conditions

Many construction equipment operators work outdoors, in nearly every type of climate and weather condition, although in many areas of the country, construction operations must be suspended in winter and during periods of extremely wet weather. Bulldozers, scrapers, and especially tampers and piledrivers are noisy and shake or jolt the operator. Operating heavy construction equipment can be dangerous. As with most machinery, accidents generally can be avoided by observing proper operating procedures and safety practices. Construction equipment operators are cold in the winter and hot in the summer, and often get dirty, greasy, muddy, or dusty.

Operators may have irregular hours because work on some construction projects continues around the clock or must be performed late at night or early in the morning. Some operators work in remote locations on large construction projects, such as highways and dams, or in factory or mining operations.

Employment

Construction equipment operators held about 416,000 jobs in 2002. Jobs were found in every section of the country and were distributed among various types of operators as follows:

Operating engineers and other construction equipment operators operate one or several types of power construction equipment.

Operating engineers and other construction equipment operators	353,000
Paving, surfacing, and tamping equipment operators	58,000
Pile-driver operators	5,200

About three out of five construction equipment operators worked in the construction industry. Many equipment operators worked in heavy construction, building highways, bridges, or railroads. About one out of five of all construction equipment operators worked in State and local government. Others—mostly grader, bulldozer, and scraper operators—worked in mining. Some also worked in manufacturing and for utility companies. Less than one in twenty construction equipment operators were self-employed.

Training, Other Qualifications, and Advancement

Construction equipment operators usually learn their skills on the job. However, it is generally accepted that formal training provides more comprehensive skills. Some construction equipment operators train in formal 3-year operating engineer apprenticeship programs administered by union-management committees of the International Union of Operating Engineers and the Associated General Contractors of America. Because apprentices learn to operate a wider variety of machines than do other beginners, they usually have better job opportunities. Apprenticeship programs consist of at least 3 years, or 6,000 hours, of on-the-job training and 144 hours a year of related classroom instruction.

Employers of construction equipment operators generally prefer to hire high school graduates, although some employers may train nongraduates to operate some types of equipment. Technologically advanced construction equipment has computerized controls and improved hydraulics and electronics, requiring more skill to operate. Operators of such equipment may need more training and some understanding of electronics. Mechanical aptitude and high school training in automobile mechanics are helpful because workers may perform some maintenance on their machines. Also, high school courses in science and mechanical drawing are useful. Experience operating related mobile equipment, such as farm tractors or heavy equipment, in the Armed Forces or elsewhere is an asset.

Private vocational schools offer instruction in the operation of certain types of construction equipment. Completion of such a program may help a person get a job as a trainee or apprentice. However, persons considering such training should check the school's reputation among employers in the area.

Beginning construction equipment operators handle light equipment under the guidance of an experienced operator. Later, they may operate heavier equipment such as bulldozers and cranes. Operators need to be in good physical condition and have a good sense of balance, the ability to judge distance, and eye-hand-foot coordination. Some operator positions require the ability to work at heights.

Job Outlook

Job opportunities for construction equipment operators are expected to be good through 2012—due, in part, to the shortage of adequate training programs. In addition, many potential workers may choose not to enter training programs because they prefer work that is less strenuous and has more comfortable working conditions.

Employment of construction equipment operators is expected to increase as fast as the average for all occupations through the year 2012 even with improvements in equipment expected to continue to raise worker productivity and to moderate demand for these workers. Employment is expected to increase as population and business growth create a need for new houses, industrial facilities, schools, hospitals, offices, and other structures. More construction equipment operators also will be needed as a result of expected growth in highway, bridge, and street construction. Bridge construction is expected to grow the fastest, due to the need to repair or replace structures before they become unsafe. Poor highway conditions also will spur demand for highway maintenance and repair. In the last several years, Congress has passed substantial public works bills to provide money for such construction projects, including mass transit systems. In addition to job growth, many job openings will arise because of the need to replace experienced construction equipment operators who transfer to other occupations or leave the labor force.

Like that of other construction workers, employment of construction equipment operators is sensitive to fluctuations in the economy. Workers may experience periods of unemployment when the level of construction activity falls.

Earnings

Earnings for construction equipment operators vary. In 2002, median hourly earnings of operating engineers and other construction equipment operators were $16.94. The middle 50 percent earned between $12.96 and $22.98. The lowest 10 percent earned less than $10.61, and the highest 10 percent earned more than $28.93. Median hourly earnings in the industries employing the largest numbers of operating engineers in 2002 were:

Highway, street, and bridge construction	$19.81
Other specialty trade contractors	17.56
Utility system construction	17.48
Other heavy and civil engineering construction	16.89
Local government	14.88

Median hourly earnings of paving, surfacing, and tamping equipment operators were $13.87 in 2002. The middle 50 percent earned between $10.73 and $19.12. The lowest 10 percent earned less than $9.07, and the highest 10 percent earned more than $25.99. Median hourly earnings in the industries employing the largest numbers of paving, surfacing, and tamping equipment operators in 2002 were:

Highway, street, and bridge construction	$14.46
Other specialty trade contractors	14.40
Local government	13.07

In 2002, median hourly earnings of piledriver operators were $21.84. The middle 50 percent earned between $14.89 and $29.24. The lowest 10 percent earned less than $11.73, and the highest 10 percent earned more than $33.97.

Pay scales generally are higher in large metropolitan areas. Annual earnings of some workers may be lower than hourly rates would indicate because worktime may be limited by bad weather.

Related Occupations

Other workers who operate heavy mechanical equipment include bus drivers; truck drivers and driver/sales workers; farmers, ranchers, and agricultural managers; agricultural workers; and forest, conservation, and logging workers.

Sources of Additional Information

For further information about apprenticeships or work opportunities for construction equipment operators, contact a local of the International Union of Operating Engineers, a local apprenticeship committee, or the nearest office of the State apprenticeship agency or employment service. For general information about the work of construction equipment operators, contact:

➤ National Center for Construction Education and Research, University of Florida, P.O. Box 141104, Gainesville, FL 32614-1104. Internet: **http://www.nccer.org**

➤ Associated General Contractors of America, 333 John Carlyle St., Suite 200, Alexandria, VA 22314. Internet: **http://www.agc.org**

➤ International Union of Operating Engineers, 1125 17th St. NW., Washington, DC 20036. Internet: **http://www.iuoe.org**

There are more than 500 occupations registered by the U.S. Department of Labor's National Apprenticeship system. For more information on the Labor Department's registered apprenticeship system and links to State apprenticeship programs, check their website: **http://www.doleta.gov**